

MoDOT's Long-Range Transportation Direction



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The Long-Range Transportation Direction is the product of one of the most comprehensive statewide planning efforts undertaken by the Missouri Department of Transportation. It builds upon past plans and needs studies and breaks new ground for MoDOT. It examines transportation needs and sets the direction for making transportation investments for all modes of transportation, not just highways.

Many factors led to MoDOT developing the Long-Range Transportation Direction. The department already had several documents that addressed transportation needs and specific projects. It needed a document that would look at the total system, lay a new planning foundation, incorporate information from previous needs studies and plans and give the department one clear direction to set the course for all modes of transportation.

The Long-Range Transportation Direction provides Missourians with a comprehensive picture of the state's transportation needs. It is not a list of specific improvement projects. Instead, it is a needs-based planning process that combines responsible engineering principles and information about the state's transportation system with information gathered by the most extensive statewide public involvement effort MoDOT has ever sponsored. The product is the result of a technically sound process that considers Missourians' needs and expectations of the state's transportation system.

While it establishes a 20-year horizon, the Long-Range Transportation Direction is a dynamic, changeable document that can be revised to accommodate changing circumstances. For example, since MoDOT started developing it in 1999, needs that were not anticipated in the original studies, including interstate highway and major bridge needs, have become more pressing and more costly. The ability to react to these and similar needs are critical to the success of the department. The Long-Range Transportation Direction will be re-examined and revised periodically as needs and conditions change.

The Long-Range Transportation Direction is the over-arching document under which MoDOT's plans take shape. It sets the tone for developing and implementing MoDOT's strategic and business plans, the six- to 10-year mid-range plan and the five-year Statewide Transportation Improvement Program.

In addition to assessing the state's highway and bridge system, the Long-Range Transportation Direction includes an assessment of aviation, bicycle and pedestrian accommodations, freight rail, passenger rail and bus service between cities, public transportation and ports. Each of these modes has needs, which must be addressed.

Involving the Public

When MoDOT started developing this document, it decided public involvement would play a key role. MoDOT went to great lengths to involve the public from the beginning. When MoDOT asked the people what they expected of their transportation system, it employed three different methods to get information critical to developing this plan.

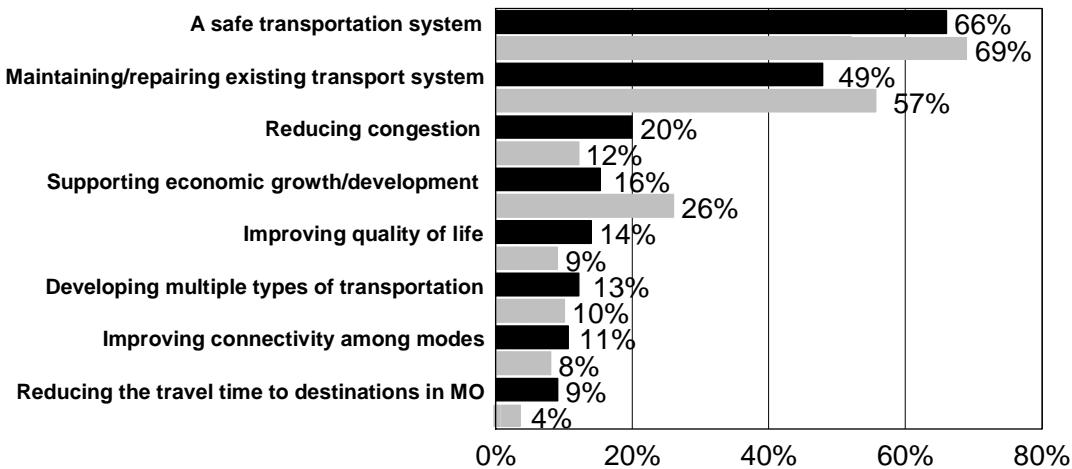
First, it held a series of Road Rallies where randomly selected citizens and civic leaders in different parts of the state were driven along a predetermined course on state roads and bridges. As they rode along, they graded road conditions based on factors such as pavement smoothness, lane and shoulder width, striping, signage and others.

MoDOT already had driven the same routes and used engineering standards to assess the conditions. Public input allowed the department to apply scores, based on the engineering standards, to what the people found acceptable. These scores are the baseline against which MoDOT will measure its success in meeting its objectives. For example, if an acceptable score for pavement on the national highway system is 32, MoDOT knows what percentage of the system currently meets or exceeds that standard and can set goals to bring more of the system up to that level.

In addition to the Road Rallies, MoDOT conducted statewide public surveys of randomly selected citizens and civic leaders. More than 2,400 Missourians helped MoDOT establish the top priorities for all modes of transportation, including aviation, bicycle and pedestrian accommodations, the highway and bridge system, passenger rail and bus service between cities and public transportation. As shown in Table 1, the top two priorities among those surveyed were a safe transportation system and maintaining the existing system. Maintaining the existing system is not meant to imply no improvements will be made to the current system. MoDOT's ultimate goal is to bring all aspects of the system up to an acceptable level and maintain them there.

Table 1
Missourians' Top Transportation Goals

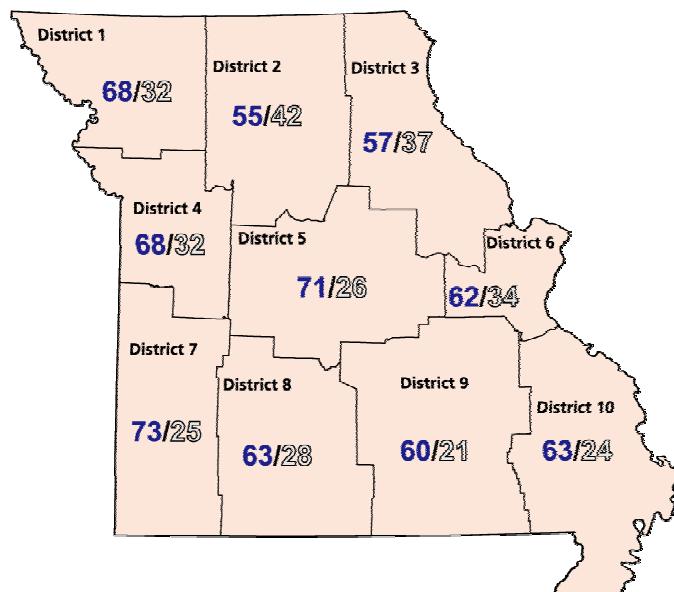
(by percentage of respondents who selected the item as one of their top two choices)



Source: ETC Institute Survey (April 2000)

■ Residents □ Civic leaders

When asked to choose priorities among the modes of transportation, both residents and civic leaders said highways were more important than the other modes. They were asked to further choose priorities within each mode. Whether they lived in the major urban areas or elsewhere in the state, Missourians overwhelmingly said taking care of the existing highway system was more important than building new roads.



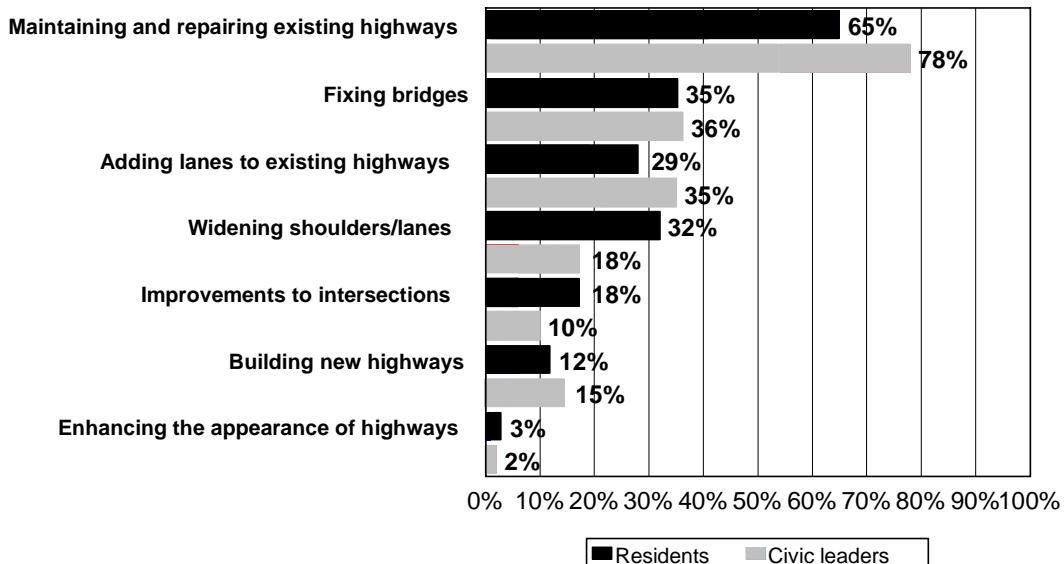
Maintenance/ Repair Adding Lanes

By percentage of residential respondents who selected these items as their top two choices. *ETC Institute Survey (April 2000)*

Their more specific choices for the highway and bridge system are illustrated below.

Table 2
Top Priorities for the Highway and Bridge System

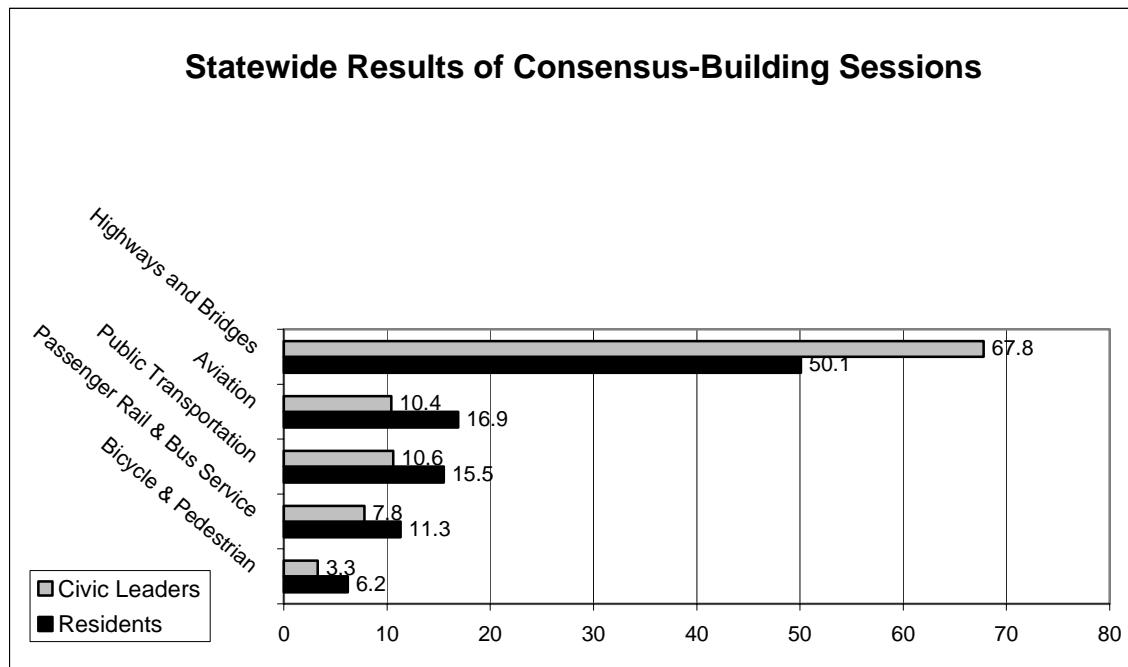
(by percentage of respondents who selected the item as one of their top two choices)



Source: ETC Institute Survey (April 2000)

Finally, MoDOT conducted a series of consensus-building sessions in which randomly selected Missourians were asked to consider the relative importance of the modes of transportation. Small groups were asked to allocate a hypothetical \$100 among five modes (aviation, bicycle and pedestrian accommodations, highways and bridges, passenger rail and bus service between cities, and public transportation). Missourians devoted half the money to highways and bridges, with \$17 going to aviation and \$16 to public transportation, the other top finishers. Once they divided the money among the modes, they were asked to subdivide each mode's share between the top two priorities in each mode. This helped MoDOT understand the transportation issues most important to Missourians. It also educated the participants about the challenges associated with planning improvements.

Table 3



The information gathered in the early public involvement sessions was invaluable. When combined with engineering data, it set the direction for this document's development. It told the department what Missourians consider important in the transportation system and played a significant role in establishing the transportation goals.

Setting Missouri's Transportation Goals

As MoDOT developed its Long-Range Transportation Direction, it became clear the magnitude of the gap between transportation needs and the funding available to meet the needs is enormous. This document focuses on ambitious goals that will move the department toward meeting these transportation needs. The department must invest its money wisely and do what it can to meet Missourians' expectations.

Making wise transportation investments is critical and determining how to make those decisions is challenging. The following goals were developed in cooperation with MoDOT's transportation partners who represented rural and urban areas. The transportation investment goals provide the foundation to meet Missourians' transportation expectations and invest transportation dollars wisely.

- Ensure safety and security in travel, decreasing the risk of injury or property damage on, in and around transportation facilities.
- Take care of the existing system of roads, bridges, public transportation, aviation, passenger rail and ports.
- Relieve congestion to ensure the smooth flow of people and goods throughout the entire system.

- Broaden access to opportunity and essential services for those who cannot or choose not to drive.
- Facilitate the efficient movement of goods using all modes of transportation.
- Ensure Missouri's continued economic competitiveness by providing a safe, reliable and efficient transportation system.
- Protect Missouri's environment and natural resources by making investments that are not only sensitive to the environment, but that also provide and encourage environmentally beneficial transportation choices.
- Enhance the quality of our communities through transportation.

These transportation investment goals are consistent with what Missourians said they expect from their transportation system. As MoDOT found through the public involvement process, Missourians demand a safe transportation system. They expect safety on all parts of the system and think it should be MoDOT's highest priority. Safety means different things to different people. Among the many types of safety improvements that can be made are turn lanes on busy roads, improved bus stops and railroad-highway crossings, traffic signals and additional lanes.

Second, while Missourians made safety their top priority, taking care of the existing highway and bridge system came in a close second. Missourians in urban and rural areas told MoDOT it should concentrate more on preserving the existing \$60 billion asset than on building new roads or adding lanes to existing roads.

Missourians also saw the need to support all modes of transportation, not just highways and bridges. Statewide, citizens and civic leaders recognized the importance of public transportation, aviation, passenger and freight rail, ports and bicycle and pedestrian accommodations. While they agreed the emphasis should be on taking care of the highways, they indicated a willingness to invest in all modes of transportation.

Addressing Transportation Needs

When it was first developed, the Long-Range Transportation Direction applied no fiscal constraints to the process. When it sought public opinion, MoDOT did not ask citizens to base their expectations on costs. The department asked for their opinions on what the state's transportation priorities should be and asked them to rank the priorities. MoDOT used the results of the public input processes and engineering principles to determine the system needs. The department also identified the existing gap between the current investment level and what it would take to fund all the needs.

The gap is enormous. While the needs are real, MoDOT realizes the level of funding sufficient to meet all transportation expectations probably never will be reached. Establishing goals that move toward meeting these expectations is a more reasonable approach.

For example, Missourians told MoDOT they would like 12-foot lanes, wider shoulders and smoother pavement on the collector routes. Collector routes normally carry local

traffic. Most lettered routes are collectors. The estimated cost to upgrade all collectors to this condition was \$4.1 billion. Although these roads make up 72 percent of the state highway system, they carry only 18 percent of the traffic. With the limited resources available, upgrading these roads is not a high priority.

Most funds will be devoted to the National Highway System (NHS) and remaining arterial roads. The collectors for the most part will be maintained at current levels. The National Highway System includes roadways considered to be of state and national significance. It consists of all interstate routes and other major highways. Arterials generally carry traffic to destinations within the state or serve as connectors to the NHS. Remaining arterials are those not included in the NHS.

While all modes of transportation have needs that cannot be met with existing funding, highways and bridges, passenger rail and bus service between cities, and public transportation have the costliest needs. Establishing priorities among each mode's needs allows MoDOT to meet the most important needs first.

- Highway and bridge investments will concentrate on the NHS and remaining arterials and establish goals for the entire highway and bridge system.
- The state's most important passenger rail needs can be met by implementing the Midwest Regional Rail Initiative on existing rail tracks with modifications between St. Louis and Kansas City.
- Missourians consistently rated public transportation as a high-priority need. Trying to meet 90 percent of the established needs will bring significant improvements in urban and rural areas.

The changing economy affects the costs in the Long-Range Transportation Direction and what improvements Missourians can expect in their transportation system. It is difficult to predict economic changes for a long period of time. The Long-Range Transportation Direction, for example, uses a 20-year timeframe. The longer the time between when a project's cost is established and when that project begins, the more uncertain the cost projection becomes. The uncertainty is greatest for projects that are anticipated more than five years in the future.

When, for example, this document's development started in 1999, the economy was robust. Since then, economic conditions have changed, resulting in less money available through the department's usual funding sources. These types of changes, along with possible upcoming changes to federal laws governing transportation funding, may affect transportation revenue. It is impossible to predict with certainty what new funding levels and/or restrictions might someday be applied.

MoDOT assumes costs of projects in all modes of transportation will grow at approximately 3 percent per year in the first five years. Beyond five years, the average growth and inflation factor is assumed to be 4.5 percent annually. These estimates are based on a combination of historical data and the best practices of other states. These

cost increases have a dramatic impact on the gap between existing resources and transportation needs.

This gap right now is more than \$1 billion a year for 20 years. This figure is not adjusted for inflation or growing project costs over time. When those factors are calculated, the resulting gap almost doubles, climbing to \$2 billion a year.

Chart 1
Needs vs. Funding

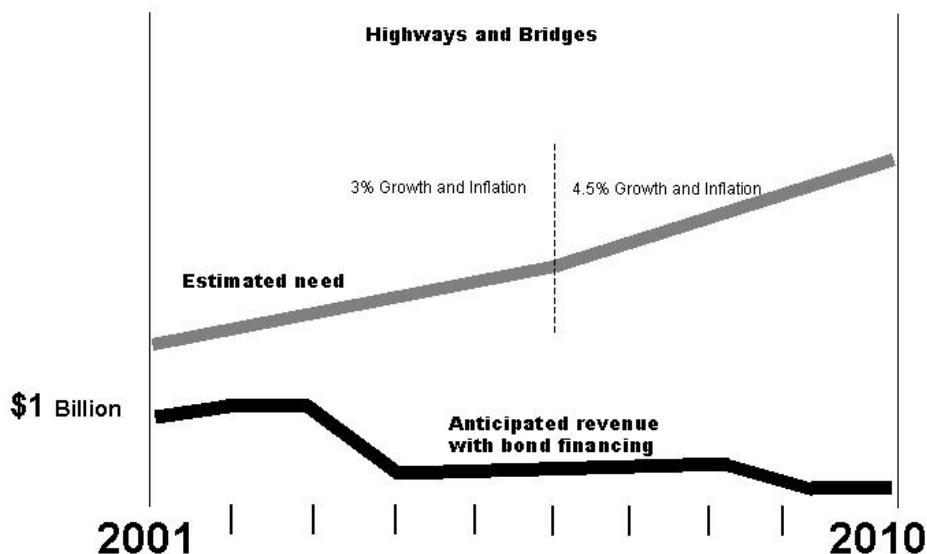


Chart 1 is an example of how variations in revenues and needs can affect the funding gap. It shows the gap between highway and bridge anticipated revenues and estimated needs for the next 10 years. As MoDOT's revenues decline, it is clear the gap will continue to widen over time. The declining revenue reflects several factors. It shows the steep drop-off in 2004 when MoDOT no longer is using bond money to finance projects and is repaying the existing bond debt using program funds. It shows another drop-off in 2008 when the 1992 six-cent gas tax is eliminated. At the same time, assuming the project growth and inflation factors discussed above, the needs continue to increase, resulting in an ever-growing gap.

Needs and Implementation Policies by Mode

As MoDOT developed its Long-Range Transportation Direction, it studied each mode independently and then combined the information into a comprehensive plan. A brief look at each mode will be helpful to better understand the overall system needs and how MoDOT determined the cost of meeting the needs.

The needs and funding goals by themselves do not offer the perspective required to implement the changes dictated by the Long-Range Transportation Direction. The Long-Range Transportation Direction also sets policy direction for each mode of transportation. The policies outlined below will help MoDOT implement the direction.

Aviation

Missouri has 138 public-use airports, 111 of which are publicly owned. Six are generally considered commercial passenger airports - Lambert-St. Louis International, Kansas City International, Springfield-Branson Regional, Columbia Regional, Cape Girardeau Regional and Joplin Regional. The large air carrier airports that have at least 10,000 annual passengers were not included in this needs analysis. They receive federal airport improvement funding directly from the Federal Aviation Administration.

The aviation needs include maintenance and upgrades to physical facilities only, and do not include operational needs. Existing airport facilities were compared with the standards for their respective classification. Conditions where an airport did not meet standards were identified. Deficiencies noted in past safety inspections also were represented as needs. Project needs for general aviation airports were developed in the three areas.

- Pavement
- Runway protection zones, runway safety areas and navigational aids
- Terminal and landside projects

Table 4
General Aviation Investment Goals
(millions of dollars)

Aviation	20-Year Capital Needs		
	Rehabilitation & Reconstruction	Expansion	Cost to Achieve Desired Result
Pavement	\$130	\$100	\$230
RPZ, RSA & Navaids	\$20	\$20	\$40
Terminal and Landside Projects	\$80	\$60	\$140
Total	\$230	\$180	\$410

The aviation program's annual funding gap was forecast to be \$11 million. Almost half of this funding gap (\$5 million) can be alleviated if the transfer of state sales tax on jet fuel to the aviation trust fund is extended beyond December 2003, when it is now scheduled to sunset. While this aviation-user generated tax doesn't cover the entire funding gap, it allows MoDOT to make significant progress in meeting aviation needs. MoDOT supports continuation of the transfer of jet fuel sales tax revenue to the aviation trust fund.

To ensure MoDOT will invest wisely in its aviation program, it will enact the following policies.

- MoDOT will work to restore and maintain the existing aviation system, provide a safe and reliable system that meets federal design criteria, and provide for expansion to meet future demand to allow for efficient and safe movement of people and goods.
- MoDOT must make fiscally responsible decisions regarding investments in Missouri's aviation system. MoDOT will use its aviation prioritization process to allocate limited resources to maintain and enhance the aviation system.
- MoDOT will develop partnerships with economic development agencies, other governmental agencies, airport owners and other interested groups to promote and educate people about the importance of projects that facilitate growth of aviation facilities.

Bicycle and Pedestrian Accommodations

The bicycle and pedestrian program includes an effective balance of engineering, education, enforcement and encouragement. MoDOT adopted the General Pedestrian and Bicycle Guide in 1999 to define how bicycle and pedestrian accommodations are to be included in state projects. The policy addresses safety, education, intermodal connectivity, environmental impacts and interagency coordination.

The bicycle and pedestrian program presently does not receive state funds, although MoDOT's policy states the department will include bicycle and pedestrian accommodations on state highways when and where appropriate. If accommodations are appropriate, they will be added as part of the highway and bridge construction budget for the projects. MoDOT will target half (more than \$7 million in fiscal year 2000) of its federal enhancement funds to bicycle and pedestrian accommodations.

Needs for bicycle accommodations can be classified according to type of rider, the type of facility and the type of trip. Needs also include education, enforcement, technical assistance and policy adoption at the national, state, and local levels.

Pedestrian needs differ from bicyclist needs. Pedestrians need sidewalks, crosswalks at appropriate locations and curb ramps. Bicyclists and pedestrians need convenient, safe access to other modes of transportation.

MoDOT will implement the following policies to guide its investments in bicycle and pedestrian accommodations.

- MoDOT will incorporate bicycle and pedestrian accommodations in state transportation improvement projects when deemed appropriate and will consider providing for pedestrian and/or bicycle accommodations during preliminary studies, design and construction.

- Improvements that provide the ability to cross major roadways and provide a link for neighborhoods, schools, recreational facilities, medical facilities, employment centers and shopping areas will receive particular attention.
- MoDOT will develop or support the following items.
 - Identification and analysis of existing bicycle and pedestrian facilities on the state transportation system.
 - Education on use, safety and benefits.
 - Recommendations on corridors and routes that comprise a state facility network.
 - Technical advice and input.
 - Establish standards for bicycle and pedestrian facilities, and work to integrate the USDOT policy for bicycle and pedestrian facilities into MoDOT policy.

Freight Rail

Freight rail is another area studied in the Long-Range Transportation Direction. Since the freight rail lines are owned by private companies, no government funding is provided, nor is any planned in the foreseeable future. MoDOT, however, is adopting policies that will help to ensure the continued survival of the small rail lines.

There are three levels of rail carriers: Class I, Class II and Class III. Class I carriers are large entities, with annual gross revenues of at least \$250 million. Class II Carriers are slightly smaller operations with annual gross revenues being between \$20 and \$250 million. The needs that will be addressed by MoDOT and the Long-Range Transportation Direction are based on the condition of the 130 main-line track miles owned and operated by Class III carriers. These carriers are small, with annual gross revenues of less than \$20 million and usually do not have the capital to upgrade their systems. These small rail carriers are important economic generators for the communities and businesses they support.

Approximately half the 130 miles operated by Class III carriers need immediate major upgrades to enable them to connect to the larger freight line systems. Much of the remaining Class III system needs minor upgrading. An estimated 40 bridges on the Class III system need complete reconstruction and another 70 bridges require rehabilitation.

Table 5
Class III Freight Rail Investment Goals
(millions of dollars)

20-Year Capital Investment	
Freight Rail	Cost to Achieve Desired Result
Major Upgrades	\$15
Minor Upgrades	\$25
Bridge Upgrades	\$40
Total	\$80

To ensure continued viability of freight rail in Missouri, MoDOT will implement the following policies.

- MoDOT will coordinate with Class I and II carriers to address track abandonment in an effort to help preserve the rail right-of-way for future rail use and work to minimize adverse economic impacts on communities affected by rail abandonments.
- MoDOT will work to enhance access of Class II and Class III carriers with Class I carriers and to support efforts to maintain the Class III rail system at appropriate condition levels.
- MoDOT will continue the grade-crossing improvement program. MoDOT will work with railroads to provide a safe and efficient railroad system that operates at minimum risk to persons and property.

Ports

Port needs include capital needs and landside access. Capital needs include levee maintenance, facilities, locks, docks, handling equipment, harbor maintenance and utilities. Meeting the capital needs for public ports in the next 20 years requires an investment of approximately \$160 million. Landside access refers to railroad and roadway access to the terminal. Current and projected landside access needs are unknown.

Table 6
Public Ports Investment Goals
(millions of dollars)

	20-Year Capital Investment	Cost to Achieve Desired Result
Capital needs	\$160	\$160
Landside Access	Unknown	---
Total	\$160	\$160

Public port funding varies from year to year, based on funding decisions by the General Assembly. The annual funding gap is \$5 million. This relatively small investment is needed to upgrade and maintain the infrastructure of a vital transportation asset.

MoDOT is adopting policies to ensure it invests wisely in its public ports to ensure their continued viability.

- MoDOT will conduct a review of state highway access to port zones, address waterway commerce needs, and ensure maximum availability of navigation services. It will plan, facilitate and provide funding assistance to projects that connect with other transportation modes.
- MoDOT supports the Missouri Port Authority Association in the development of capital improvements for ports. MoDOT also will advocate the maintenance of river channels, locks and dams.

Highways and Bridges

Missouri's highway and bridge system is the costliest portion of the total transportation system. Its originally identified annual funding gap was 87 percent of the overall gap. This is not surprising, given that the highway and bridge system is the largest, most heavily used part of the total system.

Highway and bridge needs are divided into major funding areas: rehabilitation and reconstruction, major projects (system expansion, safety and congestion) and maintenance and operations. The greatest needs are for rehabilitation and reconstruction and major projects.

Because it is essential that MoDOT take care of its 32,000-mile roadway and bridge system, rehabilitation and reconstruction of the existing system will be a priority. Missourians agree; five times more Missourians chose fixing the existing system as their top priority than chose building new roads. In general, rehabilitation and reconstruction activities are contracted and might include pavement resurfacing and bridge and pavement replacement. It might also include work that allows a roadway to meet desired standards, such as the addition of shoulders or minor pavement or bridge widening. It does not include activities that fundamentally change a facility, like the addition of lanes.

Even working with the most optimistic projections, MoDOT probably never would have the resources to achieve 100 percent of the desired conditions established for rehabilitation and reconstruction of pavement and bridges. Establishing priorities that move toward meeting these expectations is a more reasonable approach. After priorities are established, associated goals and costs must be developed.

The National Highway System, which includes the interstate system, will be MoDOT's first priority. This system represents only 13 percent of the mileage, but carries more

than 62 percent of the traffic. Currently anticipated funding will not allow MoDOT to achieve and maintain this system at 100 percent of the desired pavement condition. Even if funds were available, achieving this would be extremely difficult. **MoDOT will first take steps to stop the rate of deterioration on the system, then reach and maintain a goal of 80 percent of the system at the desired condition level.**

Table 7
Highway Rehabilitation and Reconstruction Goals – NHS
(millions of dollars)

Attribute	Desired Result	Mileage Meeting Desired Result *		Cost to Achieve Desired Result (2000 dollars)
		Current	80% Target	
Pavement	PSR*** greater than or equal to 32	1,780 (42%)	3,389	\$ 2,544
Lane Width**	12' travel lane	3,837 (90%)		0
Shoulder	10' hard surface	2,013 (48%)	no goal established	103
Total				\$2,647

* Centerline miles – miles of highway measured down the centerline. Centerline miles do not measure actual miles of pavement. For example, one centerline mile of a two-lane road would equal two miles of pavement.

** Lane width already exceeds 80 percent goal

*** Pavement serviceability rating – the smoothness and pavement distress of a road segment with 40 representing new pavement.

The remaining arterials make up another 15 percent of the mileage and carry 20 percent of the traffic in the state. Because the arterial system carries a relatively small percentage of the statewide traffic volume, MoDOT must adjust its investment in these routes accordingly. **Establishing a goal to meet 75 percent of the desired conditions on the remaining arterials will result in more than twice the miles of good pavement on this system while allowing MoDOT to use the majority of its funds to address needs on the NHS.**

Table 8
Highway Rehabilitation and Reconstruction Goals – Remaining Arterials
(millions of dollars)

Attribute	Desired Result	Mileage Meeting Desired Result *		Cost to Achieve Desired Result (2000 dollars)
		Current	75% Target	
Pavement	PSR** greater than or equal to 31	1,497 (31%)	3,621	\$ 1,626
Lane Width	12' travel lane	2,165 (45%)	no goal established	126
Shoulder	8' - 10' hard surface	1,062 (22%)	no goal established	222
Total				\$1,974

* Centerline miles– miles of highway measured down the centerline. Centerline miles do not measure actual miles of pavement. For example, one centerline mile of a two-lane road would equal two miles of pavement.

** Pavement serviceability rating – the smoothness and pavement distress of a road segment with 40 representing new pavement.

The collector system, with 72 percent of the miles, carries 18 percent of the traffic in the state. Shoulder and lane width improvements account for nearly 75 percent of the total collector system needs. However, using the same principles applied to address needs on the arterial system, **it is more practical for MoDOT to target its investments at rehabilitation and reconstruction and improvements needed to ensure safety on the collector routes. Maintaining the road surfaces will protect MoDOT's investment. Targeting roads where traffic volumes exceed 1,700 vehicles per day will benefit the most users.**

Table 9
Highway Rehabilitation and Reconstruction Goals – Collectors
(millions of dollars)

Attribute	Desired Result	Mileage Meeting Desired Result *		Cost to Achieve Desired Result (2000 dollars)
		Current	70% Target	
Pavement	PSR***** greater than or equal to 30	15,336 (66%)	16,266	\$ 983**
Lane Width***	12' travel lane	853 (4%)	no goal established	215
Shoulder****	2' - 8' aggregate surface	12,446 (54%)	no goal established	175
Total				\$1,373

* Centerline miles – miles of highway measured down the centerline. Centerline miles do not measure actual miles of pavement. For example, one centerline mile of a two-lane road would equal two miles of pavement.

** Pavement cost based on average of \$50 million per year for 10 year overlay cycle.

*** Shoulder width estimates based on assumption that improvements made on routes with > 1,700 average annual daily traffic count.

**** Lane width estimate based on assumption that 10 percent of total goal would be set aside for lane width improvements.

***** Pavement serviceability rating – the smoothness and pavement distress of a road segment with 40 representing new pavement.

The elimination of all bridges where condition ratings fall below 5 (on a scale from 1 – 9) cannot be achieved using existing funding. Cost estimates for bridges were categorized based on the corresponding roadway system (NHS, remaining arterials and collectors.) **It is reasonable to set the same goals for bridges of 80 percent at a desired condition rating of 5 on the NHS and 75 percent at a desired condition rating of 5 on remaining arterials and collectors.** The higher standard for collector system bridges is appropriate to ensure continued safety of the traveling public. Once a bridge falls below condition 3, it must be closed.

Tables 10-12 illustrate the rehabilitation and reconstruction targets for the various parts of the bridge system.

Table 10
Bridge Rehabilitation and Reconstruction Goals – NHS
(millions of dollars)

Attribute	Desired Result	Number of Bridges that Meet Desired Result		Cost to Achieve Desired Result (2000 dollars)
		Currently	80% Target	
Single-Condition Rating, Posted Load, width restricted and vertical clearance	Greater than or equal to 5, legal load limit, approach roadway width, legal vertical minimum	1,823	2,322	\$1,583
Total				
				\$1,583

Table 11
Bridge Rehabilitation and Reconstruction Goals – Remaining Arterials
(millions of dollars)

Attribute	Desired Result	Number of Bridges that Meet Desired Result		Cost to Achieve Desired Result (2000 dollars)
		Currently	75% Target	
Single-Condition Rating, Posted Load, width restricted and vertical clearance	Greater than or equal to 5, legal load limit, approach roadway width, legal vertical minimum	758	1,133	\$ 915
Total				
				\$ 915

* Divided facilities with only two lanes of traffic in each direction will be considered adequate if the median shoulders are four feet or more.

Table 12
Bridge Rehabilitation/Reconstruction Goals – Collectors
(millions of dollars)

Attribute	Desired Result	Number of Bridges that Meet Desired Result		Cost to Achieve Desired Result (2000 dollars)
		Currently	75% Target	
Single-Condition Rating, Posted Load, width restricted and vertical clearance	Greater than or equal to 5, legal load limit, approach roadway width, legal vertical minimum	1,609	4,133	\$3,379
Total				
				\$3,379

* Divided facilities with two lanes of traffic in each direction will be considered adequate if the median shoulders are four feet or more.

The other major funding category for highways and bridges is major projects. Like rehabilitation and reconstruction, the cost to address all unconstrained needs for major projects greatly exceeds available funding.

Major projects address safety, congestion relief, economic development, and new construction or reconstruction of major segments of the system. These projects substantially change the characteristics of the highway. In addition to currently identified needs, MoDOT will work with its transportation partners and planning organizations to identify, evaluate and prioritize emerging needs.

Applying fiscal constraints to the expansion needs requires careful consideration of total state needs and the statewide transportation investment goals. When MoDOT first developed the Long-Range Transportation Direction, it included all 1992 plan projects regardless of priority. In revising the plan to take a more reasonable approach to meeting its priorities, MoDOT examined the rural projects included in the 1992 plan and included the highest priority projects based on the investment goals. For example, MoDOT will focus on eliminating short stretches of two-lane roads between two four-lane sections on major corridors.

Other rural projects have been added that were not in the original 1992 plan. These were important needs that also support the goals of the Long-Range Transportation Direction and that emerged after the original plan was submitted. These projects include building three major bridges across the Missouri River on Rte. 19 at Hermann, on Rte. 59 to Atchison, Kansas and on Rte. 136 to Rulo, Nebraska.

Costs for urban major projects in Metropolitan Planning Organization long-range transportation plans are also included. The MPOs (East-West Gateway Coordinating Council in St. Louis, Mid-America Regional Council in Kansas City, Springfield, St. Joseph, Columbia and Joplin) must develop long-range transportation plans. These plans include specific major projects that are constrained by the funds available in a specific timeframe. These projects from the MPO long-range transportation plans represent the urban major project needs and are included as major projects needs in MoDOT's Long-Range Transportation Direction.

Interstate highways in Missouri are intended to function effectively as critical state and regional corridors, nationally important interstates and frequently traveled local highways. Interstate needs in Missouri are growing because of greatly increased traffic and the condition of the existing interstates. Initially, MoDOT will focus on I-70 because of its age and existing condition.

Based on MoDOT's existing major project commitments and new needs, the department estimates it will need more than \$17 billion to complete the most important statewide major projects.

Even after determining broad priorities based on the eight investment goals, more specific priorities still must be set among important projects. **MoDOT will work with its transportation partners to identify which major project investments are the state's highest priorities. It will use more measurable factors like safety, connectivity and traffic growth to establish these priorities.**

Maintenance and operations is the third category of highway and bridge funding. Maintenance includes activities designed to extend the life of pavement and bridges and to ensure safety. Operations activities are designed to maximize the efficiency of the existing highway and bridge system.

Highway, bridge and roadside assets require regular maintenance to protect MoDOT's investment and extend the time before major rehabilitation is required. In recent years, MoDOT's maintenance activities have become increasingly reactive, with less time being spent on preventive or routine maintenance. Less emphasis has been placed on roadway striping, signing, traffic signal placement and other activities designed to ensure safety. The equipment fleet and capital investments are aging and require increased resources to keep them functional.

MoDOT is developing Maintenance Vision 2000, a plan that will direct the maintenance and operational activities necessary to reverse this trend.

Preventive maintenance is the planned, proactive and often cyclical, location-specific activities that are performed on the good or better components of the system. It might include activities such as pavement and bridge sealing or bridge painting. Preventive maintenance combined with an increased emphasis on rehabilitation and reconstruction will keep the state highway and bridge system in better condition for a lower life-cycle cost.

A combined approach of rehabilitation and reconstruction and preventive maintenance is the most cost-effective, long-term strategy needed to maintain the system at an acceptable level.

The following table shows the overall level of funding needed to meet the necessary goals for the highway and bridge program.

Table 13
Highway and Bridge Investment Goals
(millions of dollars)

	Rehabilitation and Reconstruction	Major Projects	Maintenance	Cost to Achieve Desired Result
Highways and Bridges	\$ 11,871	\$17,125	\$1,400	\$30,396

The following policies will guide MoDOT's investments in the highway and bridge system.

- MoDOT will plan safety improvements that attempt to minimize the rate of fatalities, injuries and crashes. MoDOT will make safety considerations a major factor in the

prioritization of system expansion, rehabilitation and reconstruction projects. MoDOT will partner with law enforcement agencies and civic groups to implement education programs that influence driver behavior and promote understanding of engineering-based decisions.

- MoDOT will make the rehabilitation and reconstruction of the state highway and bridge system a priority. MoDOT will set system improvement goals based on the best estimate of available funding. The first priority will be the NHS, followed by the remaining arterials. MoDOT will resurface collector routes periodically or as conditions dictate.
- MoDOT will emphasize preventive maintenance activities that keep pavements and bridges in good condition and extend the useful service life of the facility, thus lowering life cycle costs.
- MoDOT will consider the total transportation facility when making roadway or bridge improvements. Needs including pavement, bridges, shoulders, signing, public transportation, bicycle and pedestrian accommodations and other factors will be considered.
- MoDOT will promote the efficient movement of people and goods on the state highway system and will provide connections to corridors that extend to neighboring states. MoDOT will work to achieve maximum efficiency on the existing system before expansion is considered. Tools such as access management and intelligent transportation system components can be used to improve traffic flow on existing roads.
- MoDOT will work to minimize the adverse effects of construction and maintenance activities to the traveling public and maximize the efficient use of funds by including all appropriate improvements in the project.

Passenger Rail and Bus Service between Cities

The Midwest Regional Rail Initiative (MWRRI) has been used to develop the needs for passenger rail in Missouri. The MWRRI is a collaborative effort among nine Midwest states (Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Nebraska, Ohio and Wisconsin), Amtrak and the Federal Railroad Administration.

In Missouri, the MWRRI calls for passenger rail service to continue between Kansas City and St. Louis. Upgrades to existing track still would be required to ensure operating speeds of 79 miles-per-hour on the existing route. The MWRRI needs presently are estimated to be \$332 million. This figure will be revised as the needs are better defined.

The current operating subsidy for Amtrak is \$6.2 million per year. It is assumed that the operating subsidy on the existing corridor will continue until approximately three years

after the MWRRI is implemented. After that, the St. Louis to Kansas City line will rely on passenger fare revenues to cover operating expenses.

The Long-Range Transportation Direction also assesses needs for providing bus service between cities. The standard used to determine the need was based on population. MoDOT assumed a city with a population of at least 15,000 would be well served by intercity bus. This population limit was chosen to represent cities that might sustain some feasible level of passenger bus demand. Enhancing bus service between cities is not a significant cost factor in assessing overall needs.

Table 14
Passenger Rail and Bus Goals
(millions of dollars)

Passenger Rail & Bus Service Between Cities	Preservation			Expansion			Cost to Achieve Desired Result
	20-Year Capital	20-Year Operating	Total	20-Year Capital	20-Year Operating	Total	
Passenger Rail	\$0	\$43.6	\$43.6	\$332	\$0	\$332	\$375.6
Bus Service	\$0	\$0.4	\$0.4	\$13.5	\$13.5	\$27	\$27.4
Total	\$0	\$44	\$44	\$345.5	\$13.5	\$359	\$403

Implementation of passenger rail and bus programs will be guided by the following policies.

- MoDOT will continue to support the preservation of the existing intercity passenger service and expanded service within Missouri and to destinations outside the state.
- MoDOT will develop a comprehensive planning process to consider the economic impacts of improvements to the passenger rail and intercity bus systems. This might include expansion of existing service and adding new services.
- MoDOT will support the MWRRI in the development of an improved passenger rail corridor between St. Louis and Kansas City.
- MoDOT will work with service providers to educate the providers and the public about the mobility needs of the elderly, disabled, children and those with low incomes.

Public Transportation

Public transportation needs were assessed separately for large urban areas, small urban areas and rural areas. In all three classifications, needs were defined as preservation and expansion needs. Preservation needs are those things necessary for continuation of the

existing service levels. Expansion needs are the capital needs required to increase or expand service.

Large urban needs address the public transportation needs of the Kansas City and St. Louis metropolitan areas. Both areas face significant public transportation needs as they try to expand and maintain current services and make essential capital improvements such as replacing vehicles.

Public transportation agencies in small urban areas struggle to maintain service levels and do not provide service to their entire urban areas. Weekend and evening service is limited. Missouri's small urban areas are Springfield, St. Joseph, Columbia, Jefferson City and Joplin. The existing needs for public transportation include preserving the existing level of service and increasing the level of service.

Access to public transportation is limited in rural areas. Because there are fewer mobility options for residents without access to automobiles, rural public transportation needs are growing. Few rural systems offer service to employment, schools, volunteer activities or community events. Better access to medical and nutritional services is especially important to certain segments of the population like the elderly and persons with disabilities.

The department reviewed the tremendous needs in this area and realized they could not be met in the next 20 years. MoDOT believes approximately 90 percent of the projected needs must be met to adequately serve the needs of Missourians. That equates to approximately \$392 million per year for the next 20 years.

Table 15
Public Transportation Goals
(millions of dollars)

Public Transportation	Preservation			Expansion			Cost to Achieve Desired Results
	20-Year Capital	20-Year Operating	Total	20-Year Capital	20-Year Operating	Total	
Large Urbanized	\$1,138	\$2,808	\$3,946	\$2,318	\$544	\$2,862	\$6,808
Small Urbanized	\$84	\$192	\$276	\$128	\$172	\$300	\$576
Rural	\$65	\$128	\$193	\$101	\$162	\$263	\$456
Total	\$1,287	\$3,128	\$4,415	\$2,547	\$878	\$3,425	\$7,840

Public transportation is an essential service for many Missourians. When surveyed, Missourians rated it the second most important mode behind highways and bridges. Investments in public transportation will be guided by the following policies.

- MoDOT will consider public transportation in its efforts to preserve and enhance Missouri's overall transportation infrastructure, environmental quality and economic

vitality. MoDOT will assist local communities in developing and maintaining public transportation systems that are safe, effective and cost-efficient.

- MoDOT will support the preservation, maintenance, expansion and enhancement of public transportation infrastructure including vehicles, facilities and other assets. It will partner with law enforcement and civic groups to incorporate safety and security in public transportation facilities.
- MoDOT will work to establish stable and sustained funding mechanisms for public transportation projects and plan, facilitate, provide funding assistance and establish service level guidelines for public transportation services.
- MoDOT will emphasize that transportation services and providers meet community needs and that transportation projects offer economic benefit to those communities.

Working Together

MoDOT understands it cannot independently determine the future of the state's transportation system. Transportation infrastructure is an important part of the state's well-being and it is affected by decisions made in the public and private sectors. MoDOT recognizes it must work with other state and federal agencies, metropolitan planning organizations, regional planning commissions, local organizations, businesses and communities to address issues and identify unforeseen circumstances and opportunities that might affect the transportation decision-making process.

With all planning organizations, needs identification and project prioritization processes will continue to be developed cooperatively. These processes will be based on the previously identified transportation investment goals and other important considerations.

Separate needs identification and project prioritization processes for the state highway and bridge system will be developed for maintenance and operations, rehabilitation and reconstruction and major project activities. These processes will be developed in coordination with MoDOT's transportation partners and used to add projects to future Statewide Transportation Improvement Programs.

Federal and state laws establish different working relationships between MoDOT and various public entities.

Metropolitan Planning Organizations

Among MoDOT's many transportation partners, its relationship with the MPOs is most formalized. Both MoDOT and the MPOs must produce long-range transportation plans. There are many similarities between state and regional long-range transportation plans and ultimately they are meant to support each other. There may be philosophical differences, but the state's investment goals are similar to those found in MPO plans. As the groups work together, awareness of the similarities and differences is important.

Some of the similarities are:

- Both have focus areas or investment goals that form the basis for decision-making.
- Both identify future needs and program funding.
- Both recognized the need to support all modes of transportation.

Among the differences are:

- The state must consider all kinds of development patterns and all sizes of communities on a statewide basis. Regional plans seldom have the statewide perspective and their consideration of development patterns is based on their particular makeup, e.g. urban, suburban, and rural.
- MoDOT's Long-Range Transportation Direction is not fiscally constrained based on projected funding. It identifies needs regardless of whether funds are available to address them. The MPO's plans are fiscally constrained.

Large Metropolitan Planning Organizations

Transportation management areas are urbanized areas with populations of 200,000 or more. Only St. Louis and Kansas City meet this requirement, though the 2000 census could boost Springfield into this category. Federal requirements give metropolitan planning organizations specific responsibilities concerning transportation planning activities in these areas.

Because the relationship between TMAs and state departments of transportation is formally recognized in federal legislation and guided by federal regulations, it is the most developed of MoDOT's affiliations with local planning agencies. MoDOT and the TMAs will pursue ways to improve their working relationships.

Small Metropolitan Planning Organizations

Federal legislation also recognizes the need to coordinate transportation planning activities in urbanized areas with populations of at least 50,000 but less than 200,000. Metropolitan planning organizations in these smaller urban areas (Springfield, St. Joseph, Joplin and Columbia) have many of the same responsibilities as the TMAs, but their levels of authority and funding are different. While these organizations also are guided by federal regulations that have developed their areas of influence throughout the years, their planning efforts continue to be developed.

Regional Planning Organizations

MoDOT also recognizes the need for coordinated planning efforts outside the metropolitan areas. To achieve this goal, MoDOT will work with the regional planning organizations throughout the state. The RPOs were established as a result of the State and Regional Planning Community Development Act of 1965.

Because RPOs coordinate local issues related to regional planning and development, they maintain an active working relationship with MoDOT. Federal law requires that states consult local officials in the transportation planning process. Regional planning organizations are consortiums of local governments. As such, they develop regional consensus and address transportation issues and are the most logical entities to help MoDOT fulfill federal requirements and capture local perspectives. MoDOT relies on RPOs to provide uniform planning services that reflect local needs and priorities.

Setting the Direction

The needs on Missouri's transportation system greatly exceed the resources available to meet them. The needs are valid; they have been established and confirmed through research and extensive public involvement. They extend across all modes of transportation. As a responsible state agency, MoDOT must focus its efforts on trying to meet these needs.

The department has established policies that will help it reach its goals. For example, before it can focus on significantly improving the highway and bridge system, it first must stop the deterioration. Only then can MoDOT move forward toward attaining the specific goals established here. MoDOT will work to establish stable sources of funding for the other modes of transportation. For example, MoDOT opposes the discontinuation of the dedicated aviation gas tax for the aviation trust fund. Based on the public's expectations, MoDOT will continue to focus on safety as its top priority in all modes and will place greater emphasis on rehabilitation and reconstruction.

The department is aware meeting all the needs is a challenge. It does not, and Missourians should not, expect instant, overwhelming progress regardless of the level of investment. What Missourians can expect is gradual improvement focusing on the highest priorities first. MoDOT will use its goals to guide its investments. Based on its work with members of the public and transportation stakeholders during the public involvement process, MoDOT believes these goals accurately reflect Missourians' priorities for transportation. They are fundamental to making wise transportation investments. The investment strategies, along with the policies embedded in the Long-Range Transportation Direction, will ensure MoDOT focuses on its most critical needs first.

Planning with Missourians' expectations in mind is a necessity, but public input must be balanced with responsible engineering decisions. MoDOT is committed to asking Missourians what they expect from the state's transportation system and using the most appropriate engineering information to help satisfy those expectations.

MoDOT will support ongoing communication with Missourians as the Long-Range Transportation Direction is implemented and updated. Ensuring that citizens have the chance to participate in the transportation decision-making process is a growing concern nationally, and MoDOT recognizes the importance of its obligation to provide these opportunities for all Missourians. MoDOT will work with its local and national

transportation partners to provide opportunities for all Missourians to participate in the transportation decision-making process.

The Long-Range Transportation Direction is not a cure-all for Missouri's transportation needs. It is, rather, the document that identifies the needs and starts to identify the processes required to meet those needs. It is not a one-time process. To ensure its continued viability, it will be reviewed frequently and adjusted as necessary to meet changing circumstances.

The Long-Range Transportation Direction does not stand alone. State and federal law require creation of a plan based on the real intermodal transportation needs of the state (23 USC 135 and the State Highway Act, section 226.132). While the Long-Range Transportation Direction sets the course of action, other, equally important plans will provide detailed direction. It is one in a group of plans, including the mid-range plan, the Statewide Transportation Improvement Program and the strategic and business plans, that will govern MoDOT's operations at all levels. As a group, the plans will ensure MoDOT will provide its customers, the citizens of Missouri, the best transportation system possible.